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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,654	09/03/2004	Mark N. Horenstein	BU-097XX	4807
207 7590 06/07/2007 WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			EXAMINER TRAN, TAN N	
			ART UNIT 2826	PAPER NUMBER
			MAIL DATE 06/07/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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**Office Action Summary**

Application No.

10/506,654

Applicant(s)

HORENSTEIN, MARK N.

Examiner

TAN N. TRAN

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on amendment filed on 03/28/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 14 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

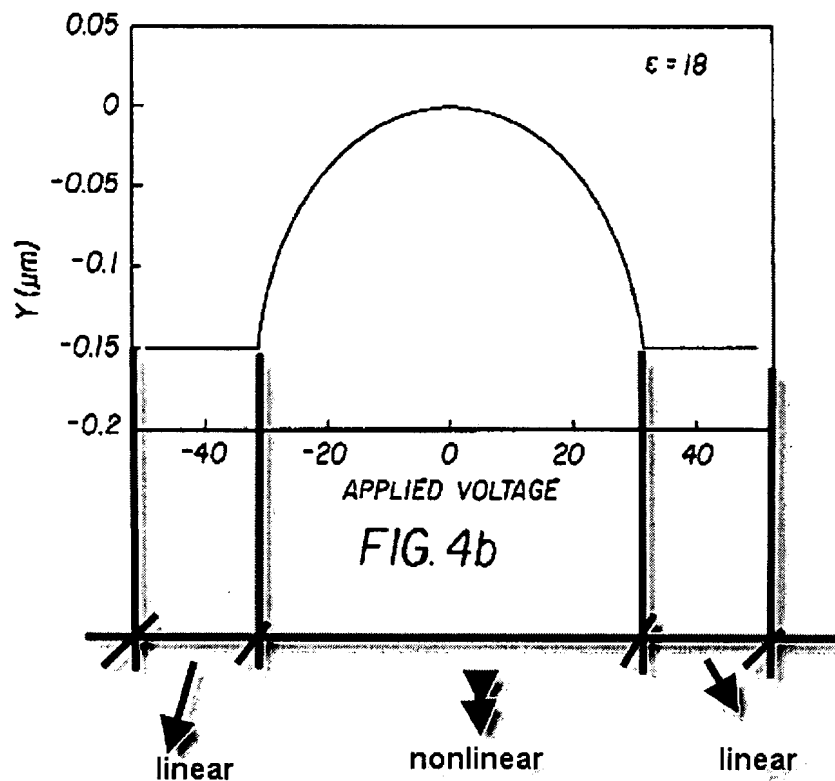
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4,8-10,16,17,21-26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over figs. 6,8b of Kowarz (2004/0058469) in view of figs. 2b,4a, 4b of Kowarz (2004/0058469).

With regard to claims 1,8,9,16,21-24, Figs. 6,8b of Kowarz discloses a first electrode 12 supported on a substrate 10; a second electrode 22 supported substantially parallel from said first electrode 12, said second electrode 22 being movable with respect to said first electrode 12 whereby an electric potential applied between said first and second electrodes (12,22) causes said second electrode 22 to move toward said first electrode 22 by a distance.

Figs. 6,8b of Kowarz do not disclose distance X is a nonlinear function of said potential (V) and V is a representation of a desired value of X; and means for linearizing the relationship between V and X.

However, figs. 2b, 4a, 4b of Kowarz discloses distance Y is a nonlinear function of the potential (Voltage) and voltage is a representation of a desired value of Y; and means for linearizing the relationship between Voltage and Y. (Note see attachment below).



Therefore, it would have been obvious to one of ordinary skill in the art to form the figs. 6,8b of Kowarz's device having distance  $Y$  is a nonlinear function of the potential (Voltage) and voltage is a representation of a desired value of  $Y$ ; and means for linearizing the relationship between Voltage and  $Y$  such as taught by figs. 2b, 4a, 4b of Kowarz because such structure is conventional in the art for forming MEMS device in order to have variable displacement in electrostatic MEMS devices.

With regard to claim 2, figs. 6,8b of Kowarz disclose second electrode 22 is divided into  $n$  plural separate electrode segments. Figs. 2b, 4a, 4b 6,8b of Kowarz disclose all the claimed

subject matter except for function of the second electrode area such as increasing from a first area over which said force results to a final larger, nth such area according to a predetermined geometric progression which offsets the nonlinearization in said transfer function between X and V. However, in reference to the claim language referring to the function of the second electrode area, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963).

With regard to claim 3, figs. 2b, 4a, 4b 6,8b of Kowarz disclose all the claimed subject matter except for function of the second electrode area and nonlinear function such as nonlinear progression produces a doubling in the area between each segment from said first electrode segment area through each successive electrode segment to said nth electrode segment area thereby providing a second order adjustment in the transfer function between displacement X and applied potential V. However, in reference to the claim language referring to the function of the second electrode area and nonlinear function, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963).

With regard to claims 4,17, figs. 6,8b of Kowarz disclose a plurality of sets of said first and second electrodes (12,22) are arranged in a two-dimensional array.

With regard to claims 10,25,26, figs. 2b, 4a, 4b 6,8b of Kowarz disclose varying causes said potential to decrease as the spacing between said first and second electrodes decreases.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7,11,12,18-20,27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowarz (2004/0058469) in view of Bloom et al. (6,215,579).

With regard to claims 5,18, Kowarz does not disclose a reflective element supported by said second electrode substantially at a point of maximum deflection thereof in response to said applied potential.

However, Bloom et al. discloses a reflective element 114 supported by said second electrode substantially at a point of maximum deflection thereof in response to said applied potential. (Note fig. 8 of Bloom et al.).

Therefore, it would have been obvious to one of ordinary skill in the art to form the Kowarz's device having a reflective element supported by said second electrode substantially at a point of maximum deflection thereof in response to said applied potential such as taught by

Bloom et al. in order to reflect the light passing through the slit into an eyepiece or onto a display screen.

With regard to claims 6,7,19,20, Kowarz and Bloom et al. disclose all the claimed subject matter except for potential function of the first and second electrodes such as a potential between first and second electrodes operative to reflect radiation over a range of angles corresponding to the deflection of each of said second electrodes in said array through phase delay wave-front steering or reflect radiation over a range of phase adjustments corresponding to the deflection of each of said second electrodes in said array through delayed phase reflection. However, in reference to the claim language referring to the potential function of the first and second electrodes, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963).

With regard to claims 11,12,27, Kowarz and Bloom et al. disclose all the claimed subject matter except for function of varying the voltage applied to said electrode segments are provided to increase the voltage between said first and second electrodes in synchronism with the application thereof to respective ones of said electrode segments or controlling the application of said potential to each electrode segment according to states of digital bits of a digital signal. However, in reference to the claim language referring to the potential function of the first and second electrodes, intended use and other types of functional language must result in a structural

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difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963).

#### Allowable Subject Matter

3. Claims 13, 28-31 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

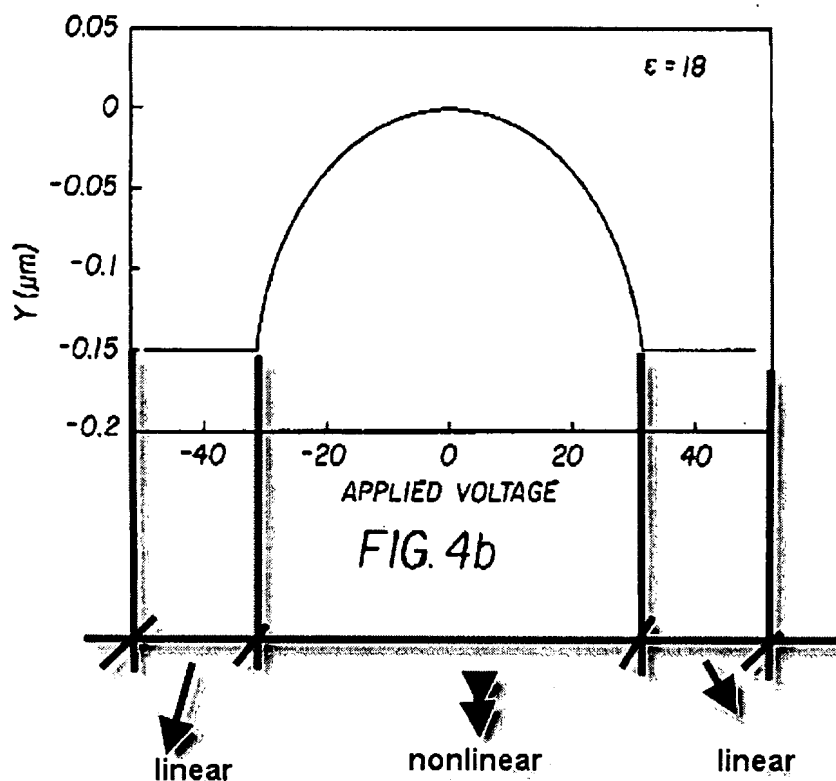
#### Response to Arguments

4. Applicant's arguments filed 3/28/07 have been fully considered but they are not persuasive.

It is argued, at page 14 of the remarks, that "The Kowarz disclosure is completely silent about linearizing the non-linear relationship between  $v$  and  $x$ " and "Nothing in Kowarz teaches, mentions or suggests providing 'means for linearizing the relationship between  $V$  and  $X$ '". However, figs. 2b, 4a, 4b of Kowarz discloses distance  $Y$  is a nonlinear function of the potential (Voltage) and voltage is a representation of a desired value of  $Y$ ; and means for



linearizing the relationship between Voltage and Y. See attachment below. Thus, applicant's claims do not distinguish over Kowarz reference.



#### Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the

mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAN N. TRAN whose telephone number is (571) 272-1923. The examiner can normally be reached on 8:30-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, PURVIS SUE can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT

June 2007

  
**EVAN PERT**  
**PRIMARY EXAMINER**